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THE TOBACCO MOTH AS A PEST IN FARMERS' PACK HOUSES

Joseph N. Tenhet and Clarence O. Bare
Stored-Tobacco Insects Laboratory
Richmond, Virginia

The tobacco moth is a common pest in commercial tobacco warehouses in Virginia and North Carolina, and can cause considerable damage to cured tobacco in storage unless adequate control measures are used. It can also be a serious pest in farmers' pack houses if the right combination of circumstances is present. Since it is probably established all through the flue-cured tobacco growing area, farmers should be aware of its appearance and the damage it causes, so that it can be recognized and preventive or control measures applied before extensive injury occurs. This insect attacks only the cured leaf and is not a pest of growing tobacco.

Cause of Outbreaks

The only previous outbreak of tobacco moth infestation in farmers' pack houses occurred in the period from 1938 to 1940. A major cause appeared to be a series of unusually early seasons, which resulted in the tobacco being harvested about a month early. Because the dates for the opening of the market had already been set, the tobacco was held on farms a month or more longer than usual, which gave the insects opportunity to develop the second generation in the farmers' pack houses. It is probable, therefore, that if the tobacco crop should be harvested early again, another serious outbreak may occur unless tobacco growers are alert and apply adequate preventive or control measures before infestations get out of hand.

The Insect

The adult is a rather small, gray moth with a wing spread of about 5/8 inch. It is closely related to and somewhat resembles the Indian-meal moth, the almond moth, and the Mediterranean flour moth. This moth is a strong flier. It lays its eggs on or near the cured tobacco leaves. The young worms, or larvae, hatch from these eggs in about 5 days.

The larval or worm stage of the tobacco moth lasts approximately 35 days, during which the larva grows to a length of about one-half inch. When full grown, the larva crawls into a crack or crevice and spins a loose silken cocoon in which it spends about 10 days as a pupa or cysalis before emerging as an adult.

A generation of this insect requires approximately 50 days. In Virginia and North Carolina there are usually two or three generations a year. The winter is passed as a larva within a cocoon. Cold weather does not kill the tobacco moth. It has survived zero temperatures at Oxford, North Carolina, and it has lived through the winter in unheated warehouses in Canada at temperatures of 30 degrees below zero.

Damage

It is only in the larval stage that the tobacco moth damages tobacco. The adult moth does not feed.

Young larvae, shortly after hatching, begin feeding on the cured tobacco leaves, particularly near the butts or stems of the leaves. An infestation may start while the tobacco is still hanging in the curing barn, but tobacco that is piled up--or in the bulk--is more favorable to infestation because it is moist. However, very little moisture is necessary for the insect's development. Redried tobacco in storage, containing less than 10 percent moisture, has been found to support serious infestations. It is probable that most of the tobacco in the farmer's pack house would have sufficient moisture to support insect life.

Close examination is required in order to detect the small larvae feeding on the leaves. In the later stages of infestation, however, the moths can be noticed flying about the pack house, especially when the piles of tobacco are disturbed.

At first the insect's presence is marked by the ragged appearance of the leaves. Later, though, many of the leaves will be entirely consumed except for the midribs (figs. 1 and 2).

The insect damages tobacco in still another way. The larva drags after it a fine, silken thread wherever it crawls. Tobacco becomes unattractive because the worm's excrement hangs in this webbing.

Prevention and Control

Once an infestation has developed in a pack house, the farmer's simplest course is to grade and market the tobacco as quickly as possible. Unless infested tobacco is badly damaged, buyers seldom discriminate

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against it, for the redrying process kills the insects in the leaf. While it is true that processing operations usually destroy all stages in the life of this insect, the fact that infested tobacco is carried to sales warehouses tends to further distribute the infestation and increase the overall distribution of this pest. It is desirable to reduce its numbers on the farm as one of the first steps in control. The following steps can be taken to prevent an infestation.

Pack house sanitation. As soon as a crop is marketed, the pack house and grading room should be thoroughly cleaned. All sticks and slats should be removed and the walls and ceiling thoroughly brushed down. The floor should be swept and scrubbed, and all scrap tobacco should be hauled away and scattered thinly over the fields, or destroyed.

No seed, feed, or organic fertilizer should be stored in the pack house, as the moths can develop in this material.

In the spring when the overwintering moths emerge, they will fly out of the clean pack house in search of a place to lay their eggs. If any tobacco is left in the pack house--even a little of the finest scrap--or if grain or feed is stored there, the moths can breed in such material until the tobacco is harvested (fig. 3). If no food material can be found, not many eggs will be laid, and any larvae that hatch from them will die for lack of food.

Hand picking during grading. When tobacco is being graded, each leaf should be examined carefully, and any worms noticed should be removed and killed. All tobacco scrap should be placed in a container, and at the end of each day's work it should be removed some distance from the pack house and either scattered on the land or burned. If scrap tobacco is left on the floor the worms will continue their development on it, and another generation of moths will soon appear. It should be remembered also that a pile of scrap tobacco or other food materials outside but near the pack house may serve as a breeding ground for large numbers of moths which will return to infest the tobacco in the building.

Spraying the pack house. In the spring before the moths begin to emerge, while the pack house is empty of tobacco, the walls and ceiling should be sprayed with 5 percent DDT. DDT residues will be effective for 30 to 60 days in killing the moths that rest on the sprayed surface. DDT should not be used in a pack house containing uncovered tobacco, since this spray leaves an undesirable residue and possibly makes tobacco unsafe for human consumption.

If an infestation should develop and it is necessary to hold the tobacco for more than 2 or 3 weeks, it may be desirable to spray the space inside the pack house with pyrethrum once or twice a week. The spray should contain 0.2 percent of pyrethrins in a light volatile oil, and should be applied at a dosage of 3 fluid ounces per 1,000 cubic feet of air space. Such a spray may be bought already mixed.

Thorough spraying is important. The spray should be applied as a very fine mist and should fill the air space inside the pack house. Care should be taken to avoid excessive wetting of the tobacco with the spray.

Reheating the tobacco. A very heavy infestation might justify reheating the tobacco to kill the insects. This is dangerous and should be done with care. Excessive or too rapid heating may redden the tobacco and reduce its quality. The tobacco on sticks should be rehung in the curing barn as if for curing, and a very slow heat applied. The temperature should be raised gradually to reach 140° F. after 9 to 10 hours. This will destroy all stages of the insect on the tobacco.

Covering the bulks. Covering the bulks of tobacco with a good grade of plant bed cloth, free from holes, gives a certain amount of protection from the moth, if the bulks are well covered and the cloth is tucked in around the bottom.

Because tobacco moths lay eggs on the cloth and the young worms crawl through it to the tobacco, every 4 or 5 days the cloth should be removed, well shaken, and placed in boiling water to destroy the eggs that have been deposited on it.



Figure 1.--Leaves of flue-cured tobacco showing injury from tobacco moth larvae ranging from slight to severe.



Figure 2.--Severe damage by tobacco moth larvae to a stick of tobacco in a bulk in a farmer's pack house.

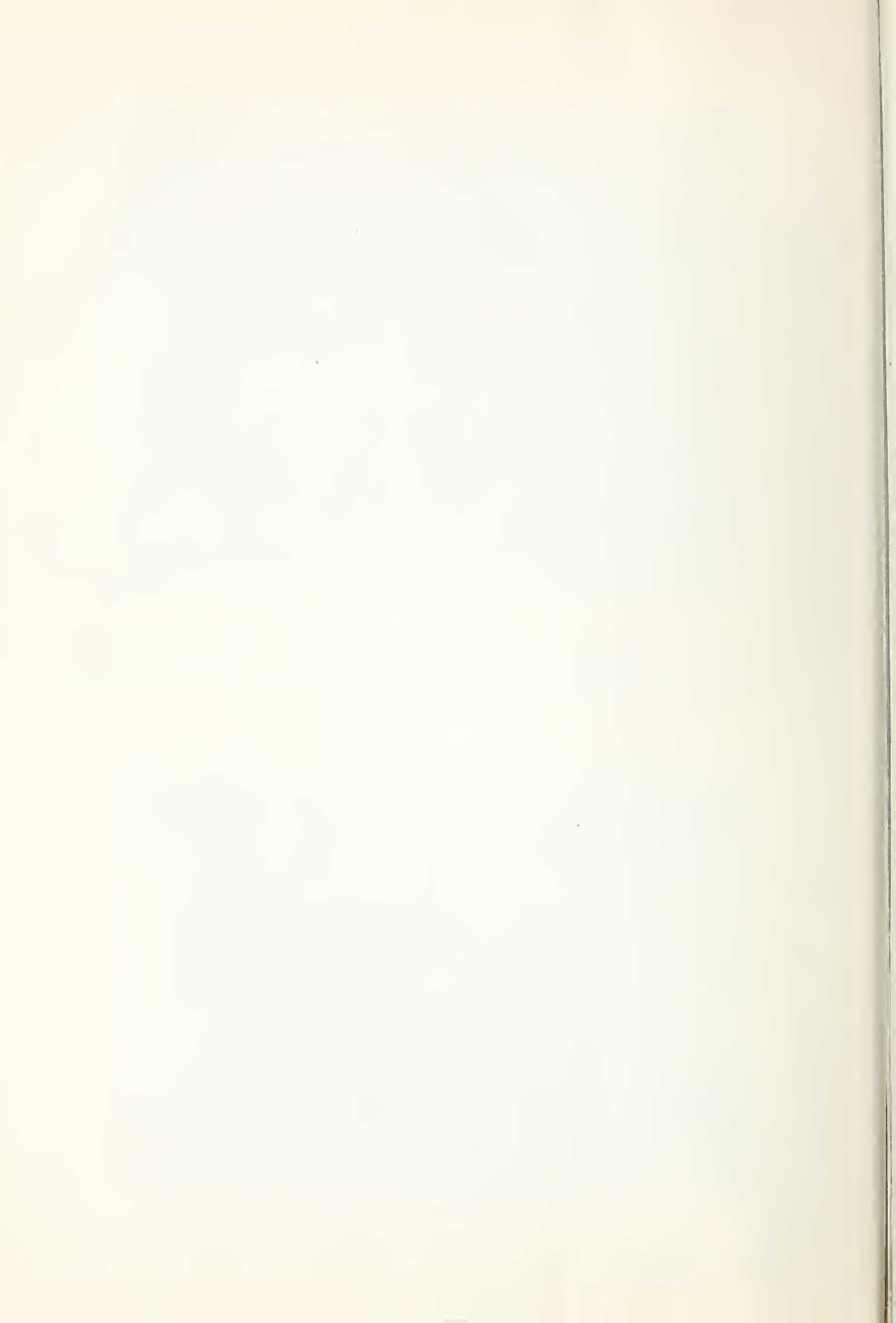




Figure 3.--Interior of tobacco pack house showing pile of scrap tobacco infested by the tobacco moth.





